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| APPLICATION NO. | FILING DATE | FIRST NAMED INVENTOR | ATTORNEY DOCKET NO. | CONFIRMATION NO. |
|---|-------------|----------------------|---------------------|------------------|
| 10/711,178 | 08/30/2004 | Shian-Jyh Lin | NTCP0014USA | 5177 |
| 27765 | 7590 | 03/07/2006 | EXAMINER | |
| NORTH AMERICA INTELLECTUAL PROPERTY CORPORATION P.O. BOX 506 MERRIFIELD, VA 22116 | | | | NGUYEN, HA T |
| ART UNIT | | PAPER NUMBER | | |
| | | 2812 | | |

DATE MAILED: 03/07/2006

Please find below and/or attached an Office communication concerning this application or proceeding.

| | | | |
|------------------------------|---------------------------------|-------------------------|--|
| Office Action Summary | Application No. | Applicant(s) | |
| | 10/711,178 | LIN, SHIAN-JYH | |
| | Examiner Ha T. Nguyen | Art Unit 2812 | |

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --
Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) Responsive to communication(s) filed on 21 December 2005.
- 2a) This action is FINAL. 2b) This action is non-final.
- 3) Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) Claim(s) 1-10 is/are pending in the application.
 - 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) Claim(s) _____ is/are allowed.
- 6) Claim(s) 1-10 is/are rejected.
- 7) Claim(s) _____ is/are objected to.
- 8) Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) The specification is objected to by the Examiner.
- 10) The drawing(s) filed on _____ is/are: a) accepted or b) objected to by the Examiner.
 Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
 Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
 - a) All b) Some * c) None of:
 1. Certified copies of the priority documents have been received.
 2. Certified copies of the priority documents have been received in Application No. _____.
 3. Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|---|--|
| 1) <input type="checkbox"/> Notice of References Cited (PTO-892) 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08) Paper No(s)/Mail Date _____. | 4) <input type="checkbox"/> Interview Summary (PTO-413) Paper No(s)/Mail Date. _____ . 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152) 6) <input type="checkbox"/> Other: _____ . |
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DETAILED ACTION

1. Applicants' Amendment and Response to the Office Action mailed 9-22-5 has been entered and made of record.

Claim Rejections - 35 USC § 103

2. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

This application currently names joint inventors. In considering patentability of the claims under 35 U.S.C. 103(a), the examiner presumes that the subject matter of the various claims was commonly owned at the time any inventions covered therein were made absent any evidence to the contrary. Applicant is advised of the obligation under 37 CFR 1.56 to point out the inventor and invention dates of each claim that was not commonly owned at the time a later invention was made in order for the examiner to consider the applicability of 35 U.S.C. 103□ and potential 35 U.S.C. 102(f) or (g) prior art under 35 U.S.C. 103(a).

3. Claims 1-10 are rejected under 35 U.S.C. 103(a) as being unpatentable over Tobin et al. (USPN 5972804, hereinafter Tobin) in view of Ibok (USPN 6080682).

Referring to Figs. 1-6, 16-18, and related text, Tobin discloses [Re claims 1-2 and 6] a method of growing a gate oxide layer, comprising: providing a semiconductor substrate 200 or 13 having thereon at least one silicon active area; cleaning said silicon active area to obtain a clean silicon active area; performing a preliminary anneal process, wherein said semiconductor substrate is placed in a chamber, N₂O or NO gas is introduced into said chamber such that said silicon active area is in contact with said N₂O gas, wherein after performing said preliminary anneal process, a nitrogen oxide thin layer with limited nitrogen-silicon bonds is formed on said silicon active area; and after said preliminary anneal process, growing a gate oxide layer, by

oxidation, on said nitrogen oxide thin layer (see Fig. 1, related text, col. 9, lines 29-43 and col. 10, lines 11-67); [Re claims 3 and 8] wherein said preliminary anneal process is carried out at a temperature of less than 1000C (see col. 7, lines 37-52).

But it fails to disclose expressly the chamber is airtight, the flow rate and the pressure of the anneal process, and [Re claims 5 and 10] wherein said preliminary anneal process is carried out at a ramp rate of 5C/min to 100C/min.

However, the missing limitations are well known in the art because Ibok discloses these features (See par. bridging cols. 5-6). In the case where the claimed ranges “overlap or lie inside ranges disclosed by the prior art” a *prima facie* case of obviousness exists. *In re Wertheim*, 541 F. 2d 257, 191 USPQ 90 (CCPA 1976); *In re Woodruff*, 919 F. 2d 1575, 16 USPQ 2d 1934 (Fed. Cir. 1990). The examiner considers the heating at a low pressure in Ibok to be equivalent to an annealing step. In the combined teaching of Tobin and Ibok, the limited number of N-O bonds due to low pressure inherently prevents adverse effects on mobility of electrons in a channel region, in the same manner as that of the instant application. Besides, it would have been obvious for a person of ordinary skills in the art to use an airtight chamber and to ramp the annealing temperature at a predetermined rate including the claimed rate to have better control of the gaseous composition and of the growth rate.

A person of ordinary skill is motivated to modify Tobin with Ibok to obtain gate dielectric with suitable quality.

Therefore, it would have been obvious to combine Tobin with Ibok to obtain the invention as specified in claims 1-10.

Response to Amendment

4. In view of Applicants' amendment to the claims, the rejection of claims 6-10 under 35 U.S.C. 112 first paragraph, has been withdrawn.

In view of applicants' amendment to the claims, the rejection of claims 1, 3, 5-6, 8, and 10 under 35 U.S.C. 103 over Tobin, as stated in the above indicated Office Action, has been withdrawn.

Applicant's arguments with regard to the rejections under 35 U.S.C. 103 have been fully considered, but they are not deemed to be persuasive for at least the following reasons.

Applicants argue that Tobin does not teach growing the gate oxide by oxidation. The examiner disagreed, Tobin does disclose this feature (see Fig. 1, steps 60, 80 and col. 7, line 37-col. 8, line 25).

Applicants argue that Ibok does not disclose an annealing step but a deposition step. The examiner disagrees, the heating at a low pressure in Ibok can be considered to be equivalent to an annealing step.

Therefore the combined teaching of Tobin and Ibok does teach or make obvious all the limitations of claim 1-10.

Conclusion

5. Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP. 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for response to this final action is set to expire THREE MONTHS from the date of this action. In the event a first response is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event will the statutory period for response expire later than SIX MONTHS from the date of this final action.

6. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Ha Tran Nguyen whose telephone number is (571) 272-1678. The examiner can normally be reached on Monday-Friday from 8:30AM to 6:00PM, except the first Friday of each bi-week. The telephone number for Wednesday is (703) 560-0528.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Michael S. Lebentritt, can be reached on (571) 272-1873. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

HN

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Ha Tran Nguyen
Primary Examiner